

CLAIMS

What is claimed is:

1. An apparatus to switch a paper feed direction of a paper for an image forming device having a frame, the apparatus comprising:
  - a paper feeding path of the paper;
  - a paper guide part disposed across the paper feeding path to be movable from an initial position to an operation position;
  - a supporting part to rotatably fix the paper guide part to the frame of the image forming device;
  - an elastic restoring part to restore the paper guide part from the operation position to the initial position; and
  - a restoring force blocking part to block a force of the elastic restoring part from acting on the paper guide part until the paper guide part fixed to the supporting part rotates beyond a predetermined angle.
2. The apparatus according to claim 1, wherein the elastic restoring part includes an elastic spring with a first end fixed to the supporting part and a second end fixed to the frame, and the restoring force blocking part includes a movable fixing part to movably support the first end of the elastic spring to move within a predetermined range when the supporting part is rotated.
3. The apparatus according to claim 2, wherein the movable fixing part includes a supporting groove having a circular arc shape disposed at the supporting part with respect to a center of the supporting part to move the first end of the elastic spring within the predetermined range to prevent the paper guide part from being pushed against the paper until the paper guide

part is rotated beyond the predetermined angle.

4. The apparatus according to claim 3, further comprising:

a paper sensor; and

a sensor actuator disposed at the supporting part to operate the paper sensor disposed at the frame, the paper sensor sensing whether the paper has passed through the paper guide part.

5. The apparatus according to claim 4, further comprising a lever to rotate the paper guide part, fixed to the supporting part beyond the predetermined angle to remove a paper jam when the paper is blocked or jammed at the paper guide part.

6. The apparatus according to claim 5, wherein the initial position of the paper guide part is a position where the paper guide part is disposed across the paper feeding path to guide the paper to a paper duplex path of the image forming device for a duplex printing, and the operation range of the paper guide part includes a first range where the paper guide part is rotated at the predetermined angle to discharge the paper to an outside of the image forming device through the paper feeding path and a second range where the paper guide part is rotated beyond the predetermined angle in order for the lever to remove the paper jam.

7. An apparatus comprising:

a guide to guide a paper and movable between first and second positions;

a restoring unit to move the guide to the second position; and

a blocking unit to limit the working range of the guide when the guide rotates beyond a predetermined angle.

8. The apparatus according to claim 7, further comprising:  
a developer to develop a first image on a first side of the paper;  
a feed roller to feed the paper having the first image to the guide along a first path; and  
a duplex roller to feed the paper having the first image along a second path after the paper passes the guide, wherein the developer develops a second image on a second side of the paper after being fed along the second path.
9. The apparatus according to claim 8, wherein the guide is further movable to a third position outside of the predetermined angle.
10. The apparatus according to claim 9, wherein the guide is moved from the first position to the second position by a force of the paper, and from the second position to the third position by an external force.
11. The apparatus according to claim 10, wherein the third position is a paper jam removing position to remove the paper when the paper is jammed, and the force of the restoring unit urges the guide to move from the third position to the first position.
12. The apparatus according to claim 11, wherein the predetermined angle corresponds to the second position.
13. The apparatus according to claim 8, wherein the guide comprises a plurality of ribs each having a first side to guide the paper to the second path and a second side to guide the paper to an outside after the second image is developed.
14. The apparatus according to claim 13, wherein the ribs are sloped with respect to

a surface perpendicular to a feed direction of the paper.

15. The apparatus according to claim 11, wherein the restoring unit allows the guide to move between the first position and the third position when activated by the external force, the external force including a first force moving the guide from the second position to the third position and a second force moving the guide from the third position to the first position.

16. The apparatus according to claim 11, wherein the guide is moved from the second position to the first position only by a weight of the guide.

17. An apparatus comprising:

a guide to guide a paper, the paper moving the guide from a first position to a second position while passing therethrough in a normal state, and an external force moving the guide between the first position and a third position when the paper is jammed in the guide; and

a restoring unit to urge the guide to move to the second position from the third position, and thereby to allow the guide to move from the second position to the first position by a weight of the guide.